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December 28, 2017

Marlene H. Dortch, Secretary
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

RE: Comments Regarding Proposed Changes to Citizens Broadband Radio Service
GN Docket No. 17-258

Dear Ms. Dortch:

KWISP Internet files these comments in opposition to the proposals to change PAL auctions from census tracts to PEAs, and the license term from 3 years to 10 years with a renewal expectancy. We are especially concerned that the change from tracts to the much larger PEAs will make it difficult if not impossible for small, rural WISPs like KWISP to participate in the PAL auction.

About Us

KWISP is a fixed wireless Internet provider (WISP) serving 600 customers in rural northern Illinois. We have plans with download speeds of 3, 6, 12 and 20 Mbps, and unlimited data usage. Our focus since 2003 has been on serving the areas outside the cities and towns, where there is no cable Internet, and DSL is either unavailable or very slow. Other than ourselves and several other WISPs, the choices are satellite or mobile broadband.

Our customers are mostly residential, due to our focus on areas outside town. We serve a lot of family farms, "farmette" dwellers, retirees on fixed income, churches, and a few businesses including grain elevators and fertilizer distributors. At farms and grain elevators, we often hook up their grain dryers and feed mills to the Internet for remote monitoring. Otherwise someone would have to stand watch over the equipment to fix problems and tweak the settings.

Even though our customers typically live within 10 miles of a small town, many of them have trouble getting reliable landline phone service at their house, or getting cellphone reception. We offer VoIP phone service to solve the first problem, but most people these days use cellphones, and they don't want to drive a mile down the road to get a signal and make a call. As a result, many of our customers have microcells from their mobile provider (using the broadband connection from us), and that is the only way their cellphone works at their house.

We use a professionally installed outdoor, high gain, directional antenna and microwave radio at each customer location. In order to get line of sight to a tower, we often have to mount the antenna on a barn, silo, utility pole or other structure, and either bury a cable or install a point-to-point wireless link to the house. This is very different from just sending the customer home with a mobile phone or mobile hotspot. We also provide equipment for connecting both Ethernet and WiFi devices, in contrast to mobile hotspots which typically support only WiFi devices.

Investment in CBRS

Our network includes point-to-point backhaul links as well as "last mile" multipoint links to end customers. Where possible we use Part 101 licensed backhaul links. We are able to follow exactly the same procedures as big carriers, since Part 101 frequencies are licensed for each specific path. Unfortunately our only choice for the last mile is unlicensed spectrum, mainly the 5 GHz band. We are replacing the 900 MHz and 2.4 GHz equipment in our network due to interference issues and insufficient capacity to meet today's broadband needs.

In the past several years we have been ramping up our use of the 3650 MHz band. We obtained our NN license in 2008 and deployed our first point-to-point link in 2010. We installed one WiMAX basestation with disappointing results, but with availability of some newer equipment, started deploying multipoint service in 2015 and 2016, relying on the proposed CBRS rules and upcoming PAL auction.

Currently we serve 90 customers using the 3650 MHz band, from 9 towers with 19 basestations/APs. We have invested around $90,000 in 3650 MHz band microwave equipment, plus labor and ancillary equipment. Assuming we are able to participate in the PAL auction, and additional spectrum becomes available in 3550-3650 MHz, we expect around half of new subscribers to be installed using this band (and some existing customers to be upgraded).

In addition to multipoint service, we have 4 backhaul links in 3650 MHz. These typically have been used at towers where 5 GHz is already heavily utilized.

We don't primarily use 3.65 MHz as a NLOS (non line of sight) technology, although we have used it for a handful of NLOS customers. Our main use has been to deploy in areas where 5 GHz is already heavily utilized, or to upgrade/replace older 2.4 GHz service that is not fast enough, has insufficient capacity, or is experiencing interference. So the result has been service for new customers, and upgraded service for some longtime customers.

Operating in the 3.65 GHz band has allowed us to deliver more reliable service to customers, since we don't constantly have to resolve interference problems. We are better able to coordinate frequencies with other users of the band. And 3.65 GHz is not used by customer premise WiFi equipment, eliminating the common problem of the customer's own WiFi network interfering with their WISP based Internet service.

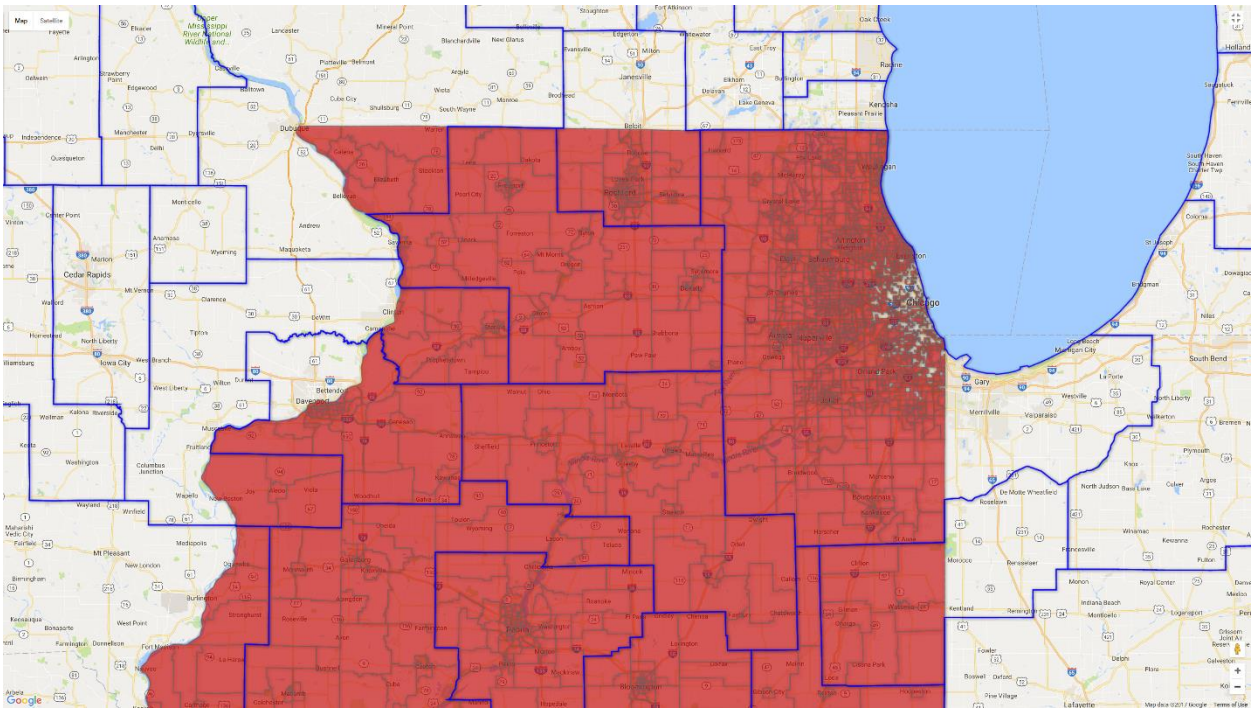
PEAs vs census tracts

Most of KWISP's current customers are in 11 census tracts. If PALs are auctioned based on tracts, we would bid on those 11 tracts, plus some adjacent tracts for expansion (we do already have some customers in adjacent tracts). Once we know the results of the auction, it makes sense to expand our coverage to match the PAL boundaries.

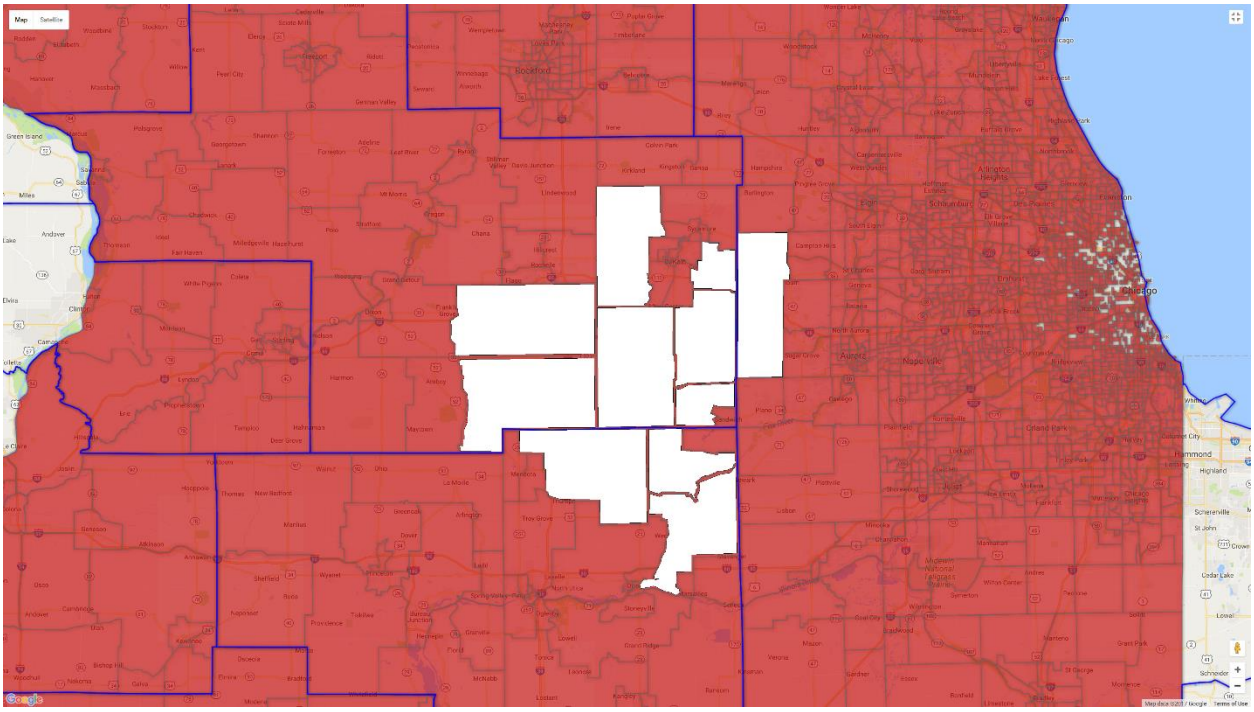
These 11 census tracts fall into 3 PEAs, each of which is dominated by one or more cities like Chicago, DeKalb or Ottawa. We don't serve those cities, or even the towns, we focus on the rural areas.

If the auction is based on PEAs rather than census tracts, we must bid on the whole PEA including the cities and towns. It is probably not feasible for a small rural WISP to bid successfully against larger carriers for a PEA. Small entities would effectively be closed out of the auction.

This map shows the PEAs and census tracts in northern Illinois. The DeKalb PEA is west of Chicago and stretches all the way to the Wisconsin and Iowa borders. The Ottawa PEA is southwest of Chicago and stretches to the middle of the state.



The next map is zoomed in a little and shows (in white) the census tracts where KWISP currently has a substantial number of customers. We had intended to bid on PALs in these tracts (plus some adjacent tracts where we would expand coverage).



The following table summarizes the problem we would face if the auction is based on PEAs.

PEA	Population	Tract	Population	Total	% of PEA
3 (Chicago)	9,366,713	17089852403	5,252	5,252	**0.06%**
224 (DeKalb)	257,786	17037000300	2,728	23,145	**9.0%**
		17037001600	4,433		
		17037001700	3,500		
		17037001800	3,970		
		17037001900	2,414		
		17103000100	2,768		
		17103000900	3,332		
270 (Ottawa)	193,858	17099961702	3,012	14,482	**7.5%**
		17099961800	4,014		
		17099962300	7,456		

Clearly it would not be feasible for us to bid on the Chicago PEA with 9,366,713 population just for one rural tract with 5,252 population. In the DeKalb PEA, our 7 tracts contain just 9% of the population. In the Ottawa PEA, our 3 tracts contain just 7.5% of the population.

Bidding on the entire PEAs is only feasible for a provider targeting the cities of Chicago, DeKalb/Sycamore, Ottawa and LaSalle/Peru. People in the cities and towns have cable or fiber based Internet available, so it does make sense to use additional spectrum to boost mobile wireless capacity in urban areas. The reverse is true in the rural areas, where the additional spectrum is best used for additional capacity to homes and businesses, many of which depend on WISPs.

<u>License term</u>

If 3 years is deemed too short to attract investment in the band, we don't have a major problem with making it modestly longer, maybe 5 years. 10 years seems long, and with a renewal expectancy, this starts to sound like the winner "owns" the spectrum forever.

We are reminded of EBS spectrum where the licenses were good for decades, during which time technology changed greatly. As a result, EBS (with a few exceptions) has not been particularly successful.

If a change is made to license term and renewal procedures, we ask for consideration of 3 issues.

- Barriers (for example paying 10 years upfront if that turns out to be a lot of money) should not be created to participation by smaller providers like WISPs.

- Flexibility should be retained because technology and industry participants could be very different in 10 or 20 years.
- Auction winners must provide substantial service in every census tract rather than warehousing the spectrum as an asset on their balance sheet, or deploying years down the road, or putting up a few token transmitter sites.

Note that it is not sufficient to say that unused PAL licenses can be used opportunistically by other providers as GAA. Broadband is not a hobby or toy, people need reliable 24x7 service, even in rural areas.

And it is unrealistic to assume that providers like WISPs will sign tower leases, buy expensive equipment, and sign up customers based on opportunistic access to spectrum. This would be our primary communication channel, not just some added capacity when available. Without PALs, the investment won't happen. So at a minimum, licenses should not be renewable without evidence of substantial (and non cherry picked) service.

Summary

KWISP has operated in the 3650 MHz band since 2010, making significant investment starting in 2015 in reliance on the upcoming CBRS rules, PAL auction, and additional 100 MHz of spectrum.

This investment has been used to provide service to new customers and upgrade service to existing customers in underserved rural areas. Without service from a WISP, most of these customers would have to rely upon satellite or mobile broadband. Some of our customers would not even be able to make voice calls on their cellphones if not for a microcell connected to their fixed wireless broadband.

We have plans with download speeds from 3 to 20 Mbps, with low latency and no usage caps. This supports the whole range of broadband Internet applications including school, work, gaming, VoIP and video streaming. We also connect farming equipment such as grain driers so farmers can monitor them from a cellphone app while out in the fields or from home.

Under the existing plan where the PAL auction is based on small geographic areas – specifically census tracts – we will bid on those census tracts where we currently have customers, plus some adjacent tracts. We would then expand our investment and coverage to align with the tracts where we are the winning bidder.

The proposed additional 100 MHz of spectrum from 3550-3650 MHz will allow multiple operators to coexist in the band, and give us additional capacity. We have mostly been constrained to two 10 MHz channels from 3675-3700 MHz, and are already starting to max out the capacity of some of our sectors. With additional deployment and more spectrum, we can serve more customers and upgrade service to existing customers.

We are very concerned about the proposed change from census tracts to the much larger PEAs. We would clearly be unable to bid on the Chicago PEA. In the DeKalb and Ottawa PEAs, we would have to bid on 10 times the population we intended. We would likely be closed out of the auction if it is based on PEAs. Without PALs, it probably does not make sense to upgrade our existing equipment to CBRS and continue investing, based only on GAA operation.

Looking at the numbers and the maps, we are convinced that census tracts are the right geographic size. It is an innovative change on the part of the FCC from the usual nationwide auctions where only the biggest providers can participate. It allows rural providers to bid on rural tracts, and big mobile carriers to bid on urban areas where they need additional celltower capacity. The big carriers can still bid on any tracts they want, they are not disadvantaged the way small WISPs (and our rural customers) would be under the proposed change to PEAs.

We do realize that a few PEAs (like Chicago) might include more small census tracts than make sense for a spectrum auction. Perhaps in those cases, urban tracts could be consolidated to something smaller than an entire PEA.

At a minimum, the major urban areas should be broken out from the PEAs, to be bid on separately. It makes no sense for a WISP to bid on the entire DeKalb PEA with no realistic expectation of serving the cities of DeKalb and Sycamore (and Northern Illinois University). Let the big 4 mobile carriers bid on those separately from the rural tracts where terrestrial fixed wireless broadband is a more effective use of the spectrum

We do not have the same level of concern regarding longer license terms and an expectation of renewal, but the idea of winners essentially owning spectrum for decades seems worrisome. At a minimum, there should be robust requirements for substantial service before a license can just be routinely renewed. And there should be some flexibility for the inevitable changes in technology and industry players.

We applaud the new 100 MHz of spectrum and innovative CBRS rules. We intend to participate in the auction and invest in expanded and upgraded service in our rural area. Unfortunately, small providers like ourselves, outside the densely populated cities and towns, will probably not be able to participate or succeed in the auction under the proposed change from tracts to PEAs. While some tweaks might be needed in major cities like Chicago and New York, we ask that the rest of the auction proceed on the basis of census tracts or a similar size geographic area.

Regards,

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